(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 October 2004 (21.10.2004)

PCT

(10) International Publication Number
WO 2004/090858 A1

---

(51) International Patent Classification[7]: G09G 5/14

(21) International Application Number:
PCT/NO2004/000099

(22) International Filing Date: 2 April 2004 (02.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20031586   8 April 2003 (08.04.2003)   NO

(71) Applicant *(for all designated States except US):* FAVOURITE SYSTEMS AS [NO/NO]; Malerhaugveien 19-23, N-0661 Oslo (NO).

(72) Inventors; and
(75) Inventors/Applicants *(for US only):* GRITZMAN, Michael [NO/NO]; Bolteløkka Allé 2, N-0168 Oslo (NO). LARSEN, Arve [NO/NO]; Collettsgt. 4a, N-0169 Oslo (NO). LUNDE, Thorstein [NO/NO]; Kolsåsstien 6, N-1352 Kolsås (NO).

(74) Agent: MIDTTUN, Gisle; Zacco Norway AS, P.O. Box 765 Sentrum, N-0106 Oslo (NO).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available):* AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available):* ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
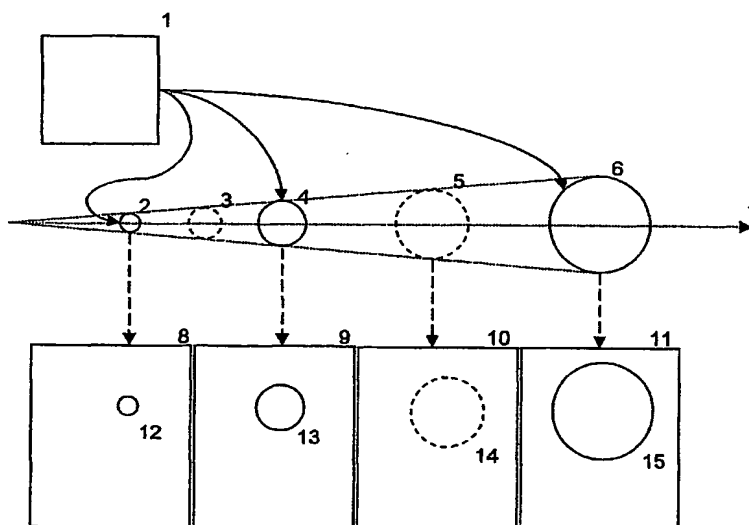
Published:
— *with international search report*

---

(54) Title: A WINDOWING AND CONTROLLING SYSTEM THEREOF COMPRISING A COMPUTER DEVICE

(57) Abstract: A method and a program system comprising a plurality of windows displayed as an evolving (7) series of instances (12, 13, 14, 15) of said windows (8, 9, 10, 11) with different sizes is described. The content of said evolving series of instances of window sizes may be changed according to specific rules and a change is performed when a size is equal with at least one predefined reference size for a window (2, 4, 6). A preferred embodiment of the present invention provides a possibility to display and manage a plurality of windows comprising standard input and output windows as well as system indicators on a small computer screen such as used in mobile telephones or Personal Digital Assistants.

1

A windowing and controlling system thereof comprising a computer device.

The present invention relates to a windowing system for computer devices communicating with a screen or a public information board, and more particularly to a
5   windowing and controlling system thereof providing presentation and interaction of large quantities of information on a small screen or on a limited part of a screen, for example a personal digital assistant (PDA), cellular phone, a toy, a clock i.e. in accordance with the amended independent claims 1 and 19.

10   Interactive windowing systems are well known and used in most types of prior art computer devices that are connected to a screen. A windowing system provides the user with easy means to perceive overview and interact with information, applications and services available in the computer device or through a computer network connected to the device.

15

The human ability to correctly interpret graphical information is highly connected to the size, resolution or recognition of typical graphical properties of the information. These limits become particularly evident on small sized screens. This restricts the ability to display large amount of information simultaneously on such screens. A common
20   solution in the prior art is to split the information into suitable segments, displaying the segments sequentially or side by side in a window. A common property of such system is the scrollbar allowing the user to scroll the window horizontally and vertically providing viewing of all the information comprised in the window.

25   The main group of computer devices connected to small screens are cellular phones, including phones with extended data functionality, smart phones. Another large group of devices are personal digital assistants (PDA), integrated with cellular phones sometimes. A last group of devices contains other devices such as embedded systems, toys, clocks, jewellery etc.

30

The prior art presentation and interaction schemes for small screens, connected to cellular phones or similar devices, are mainly based on three different approaches:

2

1. Each task occupies the entire screen, and elements of information are displayed one at a time. For example, reading or typing an SMS (Short messaging system) message, using a web browser or playing a game.

2. Another prior art solution is to allow several indicators to be displayed simultaneously, providing continuous updates of the state of selected processes. For example, indicators in cellular phones indicating battery charging levels and signal strengths.

3. A hierarchical menu system is normally used to allow the user to navigate and select among the different actions and choices to be made in a cellular phone. The menus are navigated by means of arrow keys or other designated keys. Sometimes the menu system is displayed as a two-dimensional grid of icons, allowing the user to navigate four ways rather than two ways. For such systems it is common to use sensors in the screen sensing geometrical location information from a force applied at a certain point on the screen, for example by pushing a stylus on the screen, thereby allowing the selection of an icon or a menu. PDAs normally come equipped with a stylus (a pen-formed artefact) to push or draw on the surface of the screen.

Existing windowing systems provides textual input normally by selecting a window and often a window component such as a text box, a dropdown list, a check box etc. to receive the input, for example from an attached keyboard to the computer device. When a component is selected the user can enter text or other input through said keyboard, a mouse, a stylus, a soft keyboard etc. connected to the computer device, where the text is displayed in the selected component.

In mobile phones, the prior art technique typically either use the techniques described for windowing systems above, or they display only a component that can receive input one at a time, sending any input to that component.

The approaches described above limits the numbers of applications a user can activate to one at a time. It is also difficult for a user to add new graphical icons or new indicators to the device. Further, it is not possible to prioritise indictors, allowing more interesting events to be signalled more clearly than less interesting events.

Another problem with indicators and menu systems in the prior art is that items is only displayed in two meaningful sizes, the symbol as a menu item or icon size and the full screen size. The window itself can often be scaled, but very few applications adapt to the scaling and display meaningful information in scaled windows. The normal scheme is to let the edges of the window cut the information to be displayed, leaving some information still visible while other information is hidden. Normally, a scrollbar is displayed and arranged to allow the user to scroll between the different sections of information. The solution makes it difficult to get a view of the total state of the system and to identify what is currently the most important element.

Another problem with the prior art solutions, which also is present when using touch sensitive screens, is the large number of menu items, resulting in a large menu hierarchy, which can be hard to navigate for the user. A large hierarchy of menus also forces the user to perform several actions to activate an application or to change the state of the system. It further becomes difficult to overview the set of possible actions and choices to be made.

Another problem with the prior art solutions is the need to select a specific component to receive input. If input is to be entered into several components, the user must either select one by one of several visible receiving elements, or step forward and backwards between elements if only one is displayed at a time. The user is forced to spend time finding and selecting the correct components for the input, and makes it hard for the user to keep an overview of the total of input given. Furthermore it forces the user to select the correct component to receive the input before giving the input itself, forcing the user to remember the input until the component is selected.

Several systems has been developed trying to overcome the shortcomings in the prior art. One such system is the GetRight application from Headlight Software. GetRight is a file downloading tool, and is able to display itself meaningfully as a window, as a part of the task bar in a Microsoft Windows System and as an indicator on the screen.

The patent application WO 02/37209 by Affymetrix Inc describes the hardware and software for a user interface where windows are coupled to each other. The user

4

interface is especially suitable for graphically displaying the data from analysis of biological samples.

The patent application WO 02/33576 by Park describes a method and an apparatus to produce a divided object window for a internet connected device or terminal, especially suitable for e-mail, internet advertising and similar applications, controlled by environment parameters for the object window as well as pre stored information about the window from one or several databases.

The patent application WO 03/014905 by Danger Research Inc describes a method and a system for a computer screen, focussing on user interaction regarding Instant Messaging (IM), (ICQ) messaging systems and similar messaging systems. By using this system several IM messages can be displayed and controlled simultaneously by the user through starting a first IM window where other messages are displayed as indicators.

The patent application US 2001/0047626 A1 by Akira Ohkado describes a method for controlling a window in a windowing system. By using the method, the size of windows is changed from a first size to a second size on the basis of the information contained in the window.

The patent application US 5666498 by International Business Machines Corporation describes a system and a method for automatic arrangement of windows in a display apparatus. The method includes a managing and calculating method to arrange windows making it easier to select an active window.

The object of the present invention is to provide presentation and manipulation of a large set of applications and services simultaneously by a windowing and controlling system thereof comprising a computer device communicating with a small screen, or a limited area of a larger screen.

5

In an example of embodiment of the present invention, windows on a computer screen are resized through a plurality of displayed sizes. The plurality of displayed window sizes comprises a set of at least one reference size used such that the content and/or the appearance of the content of the current displayed window is changed and displayed according to specified rules when the current window is resized to this at least one size comprised in said set of reference sizes.

In another example of embodiment of the present invention, the size of a window is used to reflect importance of windows. The largest of the displayed windows is the window with highest importance; the second largest window is the second most important etc. The importance of a window is set by a system routine or by user interaction in said window. The importance of a window is used to display a status of the content of the window, such as a process status, service status or more generally a change of information status etc.

In another example of embodiment of the present invention, the importance of a window is also signalled through the colour of the window.

In another example of embodiment of the present invention, the user can manipulate windows and their connected applications or services, including starting, stopping, hiding, displaying, enlarging, shrinking, deleting, placing etc. the windows and applications and/or services through an input apparatus connected to the computing device.

In another example of embodiment of the present invention, windows with graphical information are displayed in all its displayable sizes indicating a state of the application or service.

In another example of embodiment of the present invention, the graphical information of a window indicates a state of the application or service connected to the window. (The information is displayed in all displayable window sizes.)

In another example of embodiment of the present invention, the windowing system receives input entered from an input device connected directly to the computer device or through a network. When input is received, the windowing system sends the input to a selected window. If no window is selected or the selected window will not accept the input, a new window is created by the windowing system displaying the input received in said new window.

In another example of embodiment of the present invention, information, data and parameters can be provided to an application via at least one window comprising such information, data and parameters, where said information, data and parameter window may be dragged and dropped on to the window corresponding to the application, regardless of the size of said windows.

In another example of embodiment of the present invention, graphical elements displayed in windows or as part of a visual appearance of windows corresponding to an application or service, may be obtained from a remote computer device and downloaded through a network.

Figure 1 depicts examples of some possible basic forms of windows, according to an example of embodiment of the present invention.

Figure 2 illustrates examples of different windows comprising one or more graphical elements displaying different information according to an example of embodiment of the present invention.

Figure 3 illustrates how windows can vary in size including one window that represents a window with an importance, according to an example of embodiment of the present invention.

Figure 4 illustrates how windows can be scaled down to a smaller size when needed, picture 1 to 5, and how increasing overlap can be obtained, picture 6.

Figure 5 illustrates how a window is scaled from its existing size to its target size, through a set of intermediate sizes, where some sizes are reference sizes, some sizes are invisible sizes and some sizes are displayable sizes, according to an example of embodiment of the present invention.

Figure 6 depicts a window for an application displaying a tram schedule. The window is shown in three different sizes, each being based on different reference size of the window, according to an example of embodiment of the present invention.

Figure 7 illustrates how sizes of windows are used to represent their importance, according to an example of embodiment of the present invention.

Figure 8 is a block diagram of the main program modules in accordance with an example of embodiment of the present invention.

Figure 9 depicts an example of a list of windows in accordance with an example of embodiment of the present invention.

Figure 10 illustrates an overview of the service framework in accordance with an example of embodiment of the present invention.

Figure 11 illustrates an overview of the windowing and controlling system thereof when utilized in a chat session application, in accordance with an example of embodiment of the present invention.

Figure 12 depicts an example of a chat session based on graphical elements only, in accordance with an example of embodiment of the present invention.

Figure 13 depicts an example of signalling a state in a computer device, in accordance with an example of embodiment of the present invention.

8

Figure 14 illustrates an example on how the windowing and controlling system thereof can be used to pay for parking of a car for example, in accordance with an example of embodiment of the present invention.

5   Figure 15, depicts an example of how to find and use a window to help monitoring an event such as a football match, in accordance with an example of embodiment of the present invention.

Figure 16 illustrates the use of the windowing system when used for information 10   services, in accordance with an example of embodiment of the present invention.

Figure 17 illustrates how text is received and displayed by a window according to an example of embodiment of the present invention.

15   Figure 18 depicts how a new window is created receiving input that later is dropped on an alarm window, according to an example of embodiment of the present invention.

Figure 19 depicts how input is used to initiate and refine a search in a call window (dial window) on a cellular phone, according to an example of embodiment of the present 20   invention.

As shown in Figure 1, different windows according to the present invention may have different basic forms. A window keeps its basic form displayed in all its sizes.

25   In an example of embodiment of the present invention, the windows are seen as bubbles in a tub of soapy water seen from above. In an example of embodiment on a PDA, a stylus is used to stir. From the start, the screen is empty, showing no windows. When the stylus is used to stir the water, i.e. touching the screen, soap bubbles are created as if done in a real tub of soapy water. The created bubbles rise from the bottom towards the 30   surface of the tub, i.e. perpendicular to the screen surface. While rising, the size of the bubbles is increasing. This example of visualisation of windows, based on the concept of bubbles, gives a strong cognitive support for the use of this example of embodiment

9

of the present invention, making interaction, behaviour and necessary actions predictable and self explanatory to the user of the system.

In another example of embodiment of the present invention, bubbles that has raised all they way up will start to sink. The size of the bubbles is decreasing while the bubble sinks; until it reaches bottom of the tub. In this simple manner, by using rising and sinking bubbles in varying sizes, the screen can display any set of windows contained by the windowing system even on a small screen or on a small part of a larger screen.

In an example of embodiment of the present invention, display module software (device driver) in the computer device is used to draw the windows onto the connected screen. The windows pending to be displayed, and the order in which they are displayed, is normally provided via a list of attributes that parameterizes the presentation on the screen of said windows.

In another example of embodiment of the present invention, an attribute in said list is used by the display module as a parameter setting a window's importance. Importance can for example be set relative to 1 by giving the most important window the value of 1 and other less important pictures fractions of 1. If the importance of a window is set to 0.7, the displayed size is 0,7 times the displayed size of the window when it has the importance set to 1.

Figure 2 illustrates windows comprising different graphical elements. Figure 3 illustrates how a window of higher importance than the other windows is displayed as a window of a larger size. Figure 4 depicts an example of how windows can be scaled down according to the present invention.

In an example of embodiment of the present invention, the screen device is, via software and hardware known to a person skilled in the art, extracting the coordinates of a pressure point on the surface of the display provided by a stylus or other similar artefact. To perform an action, the user performs a gesture with the stylus or similar

artefact on the surface of the screen displaying for example a bubble. The extracted coordinates identifies the selections done with the artefact.

In an example of embodiment of the present invention, a keyboard is connected to the computing device. Actions are performed by the user selecting for example a bubble to receive an action by the arrow keys on the keyboard, and then pressing keys to invoke the appropriate action.

In another example of embodiment of the present invention, the user can select for example a bubble using a suitable action while a bubble is rising towards the surface.

In a preferred embodiment of the windowing system according to the present invention, as illustrated in figure 5, a window is scaled through for example the sizes illustrated as 12, 13, 14 and 15. This is illustrated in figure 5 as an evolution along an axis 7. The axis may represent development of size of windows over time, but said evolution is not necessarily a continuous evolution. According to the present invention the evolution through the different sizes may be event driven. Events as such can be user interactions or system routine actions etc. In the present example, when a window increases or shrinks in size, it passes through all possible sizes, including the visual sizes depicted as 2, 3, 4, 5 and 6 in figure 5. At certain geometrical sizes, called reference sizes as for example 2, 4 and 6 in figure 5, the content comprised in the window and the graphical appearance of the content is changed according to rules set in the window (as a list of parameters, for example) for the reference size while the basic form of the window is preserved. The different appearances on the display are illustrated as 8, 9, 10 and 11 in figure 5. The dotted arrows pointing from window sizes 2, 4 and 6 towards corresponding screen images 8,9,11 illustrates the actions associated by the window passing through said corresponding reference size. Possible changes of said window, but not limited to, comprises:

- Existing graphical elements in a window is provided new size and/or positions in said window.
- Existing graphical elements are removed from said window.

11

- Graphical elements from an element base (1) are added to said window.

In yet another example of embodiment of the present invention, the displaying of windows as depicted as an evolution of sizes as indicated in figure 5, is done in reverse order. That is, the displayed windows evolve shrinking in size opposite the direction indicated by the axis 7 in figure 5.

The actual displayed size of a window is defined as illustrated in figure 5 as an evolution of sizes, either as continuous evolution, up or down in sizes, or as an event driven evolution.   However, the displayed physical appearance of a window on a display may be dependent on the pixel resolution of said display. If the resolution is not sufficient to exhibit the exact size of a window, the closest possible size is selected by a device driver as known to a person skilled in the art.

In a preferred example of embodiment of the present invention three reference sizes are provided, respectively defining a minimum size of a window, a maximum size, and an intermediate size of said window.

In another example of embodiment of the present invention, two reference sizes are provided, describing a window minimum size and maximum size, respectively.

Display module software according to the present invention draws windows sized relative to its importance. Figure 7 illustrates an example of five windows with an importance from one to five. The importance is an attribute that can be set by the user. In an example of embodiment of the present invention attributes can be changed by the user by pointing at the window on a touch sensitive screen with the stylus performing a gesture, for example holding the stylus on the bubble for a minimum time, to select an edit function of said window. In another example of embodiment of the present invention, a menu is displayed with different actions associated with said window. One possible action is to set the importance of the window.

In another example of embodiment, the computer device itself sets the importance. In the example illustrated in figure 6, it is natural for said computer device to provide a

12

largest importance to a window depicting tram schedules for a station when there is minimal time left before said tram leaves said specified tram station. In this example of embodiment, it is the clock that is regulating the importance property. When the time comes into being, when the window has its largest importance, it is displayed in its largest size proportional to its importance.

In another example of embodiment of the present invention, input from an input device received by the windowing system is sent to an active window. An active window is a window that a user recently has selected, for example with an artefact on a display of a PDA. An active window may also be a window recently set up by the windowing and controlling system thereof according to the present invention. Said window provides the text to an algorithm receiving text provided specifically for this window. The algorithm may be as simple as just outputting and displaying the typed text in said window. Other examples of algorithms may perform an interpretation or parsing of text as known to a person skilled in the art of the typed text, extracting interesting data to set parameters for a window for example, using the text to perform a search among choices connected to the window etc.

In another example of embodiment of the present invention, a new window is set up to receive typed text when input from an input device is received by the windowing system. In this manner typed text can be kept by the system without being communicated to any specific application. The typed text may be kept for example as a "sticky note". Another possible use of such texts is to set parameters in another window by dragging the typed text window into that receiving window.

In a preferred embodiment, the execution of software modules comprising the windowing and controlling system thereof according to the present invention is based on two main parts: A runtime system that handles the dynamics and the processing of the execution of said software modules and a service framework that is a collection of objects that are the core of all services in the system.

Figure 8 illustrates the main components of the runtime system. The execution of the system in figure 8 utilizes the already present services in an operating system of a computer device as known to a person skilled in the art. The most important such services are a graphical device interface (GDI), "events connected to inputs" service

13

(Event), communication with other processes and systems components (COM) and network communication (NET).

Based on the basic services, a layer of support services is provided. The support
5   services can be categorized as follows:

- Management of drawing, placement, size and importance of windows, Control Manager 1.
- Management of lists of application, List Manager 2.
10 - Management of resources such as graphics resources etc. Resource Manager 3.
- Management of messages to and from networks, including delivery to right application based on said applications address, Message Manager 4.

The control manager 1 uses a list 2 of current windows to decide size, placements etc. of
15 said current windows on a display. The list 2 comprises references to windows and related data, including their importance. An example of list content is illustrated in figure 9. Each window has an internal identifier (Window Name), its importance defined as a relative number (Relative Importance) and a list of needed resources (Resource List). Resources are referred by name, and the resource manager is
20 responsible for managing the resources such as locating them, including downloading them if necessary, allocate and free memory locations in the computer device running the windowing and controlling system thereof etc. The list may also comprise reference to objects (files) comprising graphical elements used by the windowing system. Such images can be bit-map based graphics, vector based graphics or a combination of both.
25 Such graphical elements may be downloaded from a remote computer system via a network. A display module (not shown) can scale, enlarge and reduce such images as known to a person skilled in the art.

In addition to its basic information, a window according to the present invention can
30 have an external identifier (External ID) used by for example the messaging service 4 in figure 8 when sending and receiving messages.

14

The main components of said service framework may be illustrated as in figure 10. The service framework is an object oriented structure, providing the basic functionality required of all services built in accordance with the present invention. The service framework contains the basic functionality needed by any service that is displaying a window in the windowing system. The different classes are described below.

All windows share a common base (Base). No instance of windows is built directly on the base, but on its different derivations. The most important methods and attributes are related to handling of:

- importance
- drawing of figure
- management references to resources
- scaling
- Functionality for basic interaction.

The most basic windows act merely as graphical symbols and are based on the Symbol class (Symbol). A symbol comprises no private processing, and can be seen as a realisable version of the base class (Base)

Basic windows with own processing, such as basic services, are based on the SimpleApplication class. This class extends the base class with for example methods for:

- Receive and send events, including addressing mechanisms.
- Own processing.

Services that should be able to comprise other windows other than it own, is based on the ContainerApplication class. The class extends its SimpleApplication with for example the following attributes and methods:

- adding a window
- removing a window
- checking when adding or removing windows.
- drawing the composite content

15

Services that should be able to receive (for example by drag and drop actions) specific windows comprising information regarding said receiving window, for example to indicate special events or setting specific parameters, are based on the

5 ChoiceApplication class. The class extends ContainerApplication with for example the following attributes and methods:

- A set of possible choices, i.e. windows (Windows based on the Choice class) that can be added and/or removed in accordance with specified parameters, events etc.

10 - List management and control unit for choices, allowing choices to be displayed and browsed by the user.

The present invention may be used for many different applications and on different types of devices. A very special important application, when used in cellular phones or

15 PDAs, is chat. Figure 11 illustrates windows and actions provided as derived from a chat session by a group of friends planning to see a movie. Picture A, figure 11, illustrates how the windowing system is utilized in a chat. One participant, Tom initiates the chat. On his screen he has a window representing himself 2 as well as another window 4. The last windows can be any kind of window, for example a window with an

20 image received from a friend, a service provider or taken by a camera attached to the computer device etc.

From the start, Tom's screen displays an empty chat only comprising himself as participant. In addition, the screen displays windows representing the persons and

25 groups 3 that can be added to the chat, and other windows 15 that Tom often uses during his chats.

Tom selects a set of receivers by dragging the different windows representing receivers into the chat. The screen is continuously updated to display any changes as illustrated in

30 B. Participants are displayed with names. The number of unread messages 14 in the chat is also displayed.

16

In addition to the window view of the chat, Tom can enter a standard full screen view for the same chat as shown in C. Tom writes a message 9, which is marked with his name and the current time 8. Tom can also mark one or several words so they will be visible in the window view 10.

When Jane receives the chat from Tom, as shown in E, she decides that she want to attend, i.e. see the film. She indicates this by dragging the window representing her 2 into the chat. This action is indicated graphically in the list of participants as shown in F, reference 5. In the full screen view of the chat, it is displayed as a system message as shown in G, reference 12.

When Jane starts interacting with the chat in F her screen displays the windows she is normally using when chatting, for example an alarm 7. She can also enter the full screen view of the chat as shown in G to write that she prefers to go to the cinema nine o'clock as shown in reference 9.

When Jane has finished her message, she makes the window view smaller as shown in H. As a result, some of the information is removed 4, some is kept 11, while other information, such as the names, is displayed but with another representation requiring less space (for example reference 5 is changed to reference 6).

Figure 12 illustrates how a chat can be performed directly in the window view. Tom takes the initiative as illustrated in A. He starts the chat 1, invites Jane 3 and adds the window 2 comprising some content that both of them can interpret. Jane answers as shown in B by adding a new window 4, as her contribution. Tom answers as shown in C by removing his window 2. This way, the dialog takes place in the window view. The full screen view is still available all the time.

Figure 13 illustrates a situation where Tom has several windows 3 displayed on his screen, as shown in A. In addition, he has a window 1 indicating how much time is left to a certain event. This can for example be the time left before the next tram is leaving bringing him home from work.

Most of the day, the screen has only minor changes as shown in B. The window displaying the tram schedule changes its colour to indicate the time left before the next tram leaves, reference 2.

5

When the clock comes to being the normal departure time when Tom is leaving his work travelling for home, the tram window increases in size as indicated in 5 display C. Similarly, Tom can change the size of the window manually by performing a suitable action. As the window increases it also provides space for more detailed information, in this case showing that it is only a short time before the tram leaves 7, while an alternative bus is leaving somewhat later 6. The graphical element representing the tram is larger than the element representing the bus. The different sizes indicate that the user is in more haste if he plans to take the tram home, rather than the bus.

As the time evolves, the bus element shown in C starts to increase, and change colour. Since the window itself 5 does not become more important it does not change size. Rather than making the bus element larger, the tram element is made smaller to indicate that the tram and the bus now have the same importance.

Figure 14 illustrates a service for paying and controlling the time left for a parking space. The example starts when the first payment is done as shown in A and there is 24 minutes left of the paid time 1. In addition, the user has several other windows 3 on the screen. As the time left becomes less, as shown in B and C, the figure increases and changes colour, reference4 and 8. As the figure increase in size, there is also more space for additional information. If the user wants to pay to get additional time, he performs a suitable action on the window to make it display possible choices C. Possible choices can be to pay until a specified time 5 or a specific amount 6. In the example the user selects to pay until a specific time. The user performs an action on one of the time alternatives to see more time alternatives as shown in D reference 7. In the example the user chooses to pay until 15:40 by performing an action on the window containing the 15:40 text to add it to the parking window. When the user finishes the payment

18

procedure, the window shrinks as shown in E, to illustrate that it is a long time before the parking time runs out.

Figure 15 display A illustrates a screen with no visible windows. The user performs an action to make the computer device display possible windows as shown in B, 2,3. The user is interested in one of these windows 3, and the other windows 2, disappears when the user selects the window of interest as shown in C. The window selected by the user is a window used to follow a football match 4. The window changes size and content dependent on events of interest in the match as shown in D reference 5.

In Figure 16 the user has a screen with no visible windows, as a new window is received from the network connected to the computer device. The window 1 displays information about skiing conditions nearby as shown in picture A. The user is interested in information about activities, but is not sure skiing is the right ting. The user performs an action on the window to get a new suggestion as shown in B, in this case swimming 2. The user decides that a trip to the pool is interesting but wants to invite some friends. The user performs an action displaying a selected set of all possible windows as shown in C, reference 4 and 5. The user selects the chat window 5 by dragging the swim window into the chat window as shown in C. The chat can proceed as in the example describing chat (see figure 11 and 12).

In display A of Figure 17, an SMS window 1 is active, and has the receiver of the SMS set to Kim. Other possible receiver are shown 2,3, and can be added by the user. As the user types the text, the text is received by the windowing system and directed to the SMS window. The text is interpreted to be the content of an SMS, and simply displayed 4 by the bubble, for example.

In display A of figure 18, the user has no active windows. As the user starts typing the windowing system creates a new window to receive the input, picture B, 2. The user types some text, containing four digits at the start. The user drags and drop the text window 2 on to the alarm window 1, for example. The alarm window interprets the text and extracts the four digits as timing information, and sets the time parameter of the

19

alarm window accordingly. The time for the alarm, and the rest of the text is displayed in the alarm window, picture C, 3.

In display A of figure 19, the user has a call (dialling) window active 1. The most often
5   used persons 2 and recent used lists 3 in the address book are displayed around the call window. To call on of the persons the user can perform a suitable action on the window of that person, but the user starts typing instead. As the user starts typing, the windowing systems send the text to the call window (active window). The call window displays the text and uses the text as search criteria. In B the user has typed P, and only
10 persons having a name starting with P is displayed, still with the most often used persons first. Further typing refines the search C, when there is only one person left, the person is made the active bubble to make it easier to perform an action to call that person.

15 In another embodiment of the invention the connected input device may be the keyboard where each key has multiple interpretations, as in most cellular phones. When input from such a keyboard us used for searching, all the variants of interpretations are used to define the search criteria. The text displayed is the number of interpretations of the keys. When the set matching the search criteria is empty, the user can dial the
20 number typed directly by performing a suitable action on the call window. The other search mechanisms are performed as described in the above embodiment.

Although the preferred embodiments of the present invention have been described in detail, it should be understood that various changes, substitutions and alternations can
25 be made therein without departing from the spirit and scope of the present inventions as defined by the appended claims.

20

C l a i m s :

1.

Method for windowing and controlling system thereof comprising a computer device or

5   system communicating with a display, wherein said method comprises the steps of:

defining basic geometrical shape and graphical appearance for a least one window;

providing at least one set of different sizes for said at least one window comprising at

least one size arranged as a reference window size;

10   providing a relation to graphical appearance of content to be comprised and displayed in

said at least one reference window size;

displaying windows on said display by arranging said controlling system to display said

at least one window as an evolving series of instances of different sizes corresponding

to said at least one set of different window sizes; and

15   retaining said basic geometrical shape in all said displayed instances of said displayed

windows.

2.

Method according to claim 1, wherein said relation to said graphical appearance of said

20   content of said at least one reference window size comprises at least one parameter

shaping said graphical appearance.

3.

Method according to claim 1, wherein said at least one set of sizes of windows

25   comprises three different sizes.

4.

Method according to claim 1, wherein said at least one set of sizes of windows

comprises at least two different sizes.

30

5.

Method according to claim 1, wherein said displaying of said evolving instances of

sizes of said displayed windows may be interrupted by user actions or system actions

related to said displaying of one of said instances of said displayed windows, thereby

causing said one instance of window to be resized and displayed in a larger defined size from said at least one set of sizes for that window.

6.

Method according to claim 1, wherein said displaying of said evolving instances of sizes of said windows may be interrupted by user actions or system actions related to said displaying of one of said instances of said windows, thereby causing said one instance of window to be resized and displayed in a smaller defined size from said at least one set of sizes for that window.

7.

Method according to claim 1 to 6, wherein said controlling system comprises a parameter related to an importance of a window.

8.

Method according to claim 7, wherein said importance parameter is a number between zero and one, meaning one to be the highest importance.

9.

Method according to claim 8, wherein said importance parameter for said window is used to scale a size of said window proportional to a value of said importance factor.

10.

Method according to claim 1, wherein said displaying of said series of evolving sizes of windows comprises displaying at least one graphical image representing a state of an application or a service running in said computer device or system, in said at least one window in all its said instances of sizes.

11.

Method according to claim 1, wherein said displaying of said series of evolving sizes of windows further comprises the steps of:

providing a parameter indicating a state of an application or a service running in said computer device or system;

arranging at least one of said windows as a window representing said state of said application or service;

22

modifying the displayed size or a location for displaying said one window on said display in communication with said computer device or system in accordance with a value of said parameter indicating said state of said application or service.

5   12.
Method according to claim 1, further comprising the steps of:

arranging at least one window among said windows in said controlling system as corresponding to an application or service running in said computer device or system;

10

providing means for defining a value for at least one parameter for said application or service in another of said windows;

providing means to drag and drop at least said one window comprising said value of
15   said at least one parameter on to said window corresponding with said application or service, thereby transferring said value to said parameter for said application or service.

13.
Method according to claim 1, further comprising the steps of:

20

arranging at least one window among said windows in said controlling system as corresponding to an application or service running in said computer device or system;

providing means for reading or mirroring a value for at least one parameter for said
25   application or service ins said arranged window for said application or service;

providing means to display a content comprised in said series of evolving said window sizes corresponding to said application or service, wherein said content may be changed as a function of said value of said at least one parameter and current instance of window
30   size comprised in said at least one series of displayed window sizes.

23

14.

Method according to claim 1, wherein said step of defining said basic geometrical shape and graphical appearance for said at least one window is provided in a remote computer device or system, and then downloaded as needed via a network communicating with said controlling system of said windowing system.

15.

Method according to claim 1, further comprising the steps of:

receiving input from an input device such as a keyboard, a mouse, a stylus or artefact, a soft keyboard or similar device in communication with said computer device or system either directly connected to said computer device or system, or via a network communicating with said computer device or system;

transferring said input via said controlling system to a recently activated window activated by an application, user interaction or service or similar action in said computer device or system;

if said recently active window is not provided to receive input, provide another new window enabling receiving such input;

displaying said input in said activated window or said new window.

16.

Method according to claim 15, wherein said receiving of input in said activated window or said new window comprises activating a parsing of received text in said activated or said new window.

17.

Method according to claim 16, wherein said activating of said parsing is provided by dragging and dropping said window receiving said input on to another window comprising said parsing.

18.

Method according to claim 1, wherein said step of displaying said evolving windows sizes on said display in communication with said computer device or system, comprises the step of starting said displaying by touching or stroking a surface of said display with an artefact or similar device or a finger.

19.

Program system for controlling a windowing system comprising a computer device or system communicating with a display, comprising:

means for defining basic geometrical shapes and graphical appearances for at least one window;

means for defining at least one set of different sizes, or calculating means calculating different sizes, for said at least one window where at least one of said sizes is defined as a reference window size;

means for relating, indicating, mirroring or modifying graphical computer images by other means to be displayed in at least said one reference window size, or modifying an appearance of said reference window size;

means for displaying windows on said display by arranging said program system to display said at least one window as an evolving series of instances of different sizes corresponding to said at least one set of different window sizes;

20.

Program system according to claim 19, wherein said modifying of said appearance or said displaying of said graphical computer images of said content of said at least one reference window size comprises at least one parameter shaping said graphical computer images or said appearance of said windows.

25

21.

Program system according to claim 19, wherein said sets of sizes of windows comprises three different sizes.

22.

Program system according to claim 19, wherein said sets of sizes of windows comprises at least two different sizes.

23.

Program system according to claim 19, wherein said displaying of said evolving instances of sizes of said displayed windows may be interrupted by user actions or system actions related to said displaying of one of said instances of said displayed windows, thereby causing said one instance of window to be resized and displayed in a larger defined size from said at least on set of sizes for that window by said program system.

24.

Program system according to claim 19, wherein said displaying of said evolving instances of sizes of said displayed windows may be interrupted by user actions or system actions related to said displaying of one of said instances of said displayed windows, thereby causing said one instance of window to be resized and displayed in a smaller defined size from said at least one set of sizes for that window by said program system.

25.

Program system according to claim 19 to 24, wherein said program system comprises a parameter related to an importance of a window.

26.

Program system according to claim 25, wherein said importance parameter is a number between zero and one, meaning one to be the highest importance.

26

27.

Program system according to claim 26, wherein said importance parameter for said window is used to scale a size of said window proportional to a value of said importance factor in said program system.

28.

Program system according to claim 19, wherein said displaying of said series of evolving sizes of windows comprises means for displaying at least one graphical image representing a state of an application or a service running in said computer device or system, in said at least one window in all its said instances of sizes.

29.

Program system according to claim 19, wherein said displaying of said series of evolving sizes of windows further comprises the means:

means for providing a parameter indicating a state of an application or a service running in said computer device or system;

means for arranging at least one window representing said state of said application or service;

means for modifying the displayed size or a location for said displaying of said one window on said display in communication with said computer device or system as a function of a value of said parameter indicating said state of said application or service.

30.

Program system according to claim 19, further comprising the means:

means for arranging at least one window representing a state of an application or service;

means for defining a value for at least one parameter for said application or service in at least one window;

27

means for dragging and dropping at least said one window comprising said value of said at least one parameter on to said window corresponding with said application or service, thereby transferring said value to said parameter for said application or service.

5   31.

Program system according to claim 19, further comprising the means:

means for arranging at least one window representing a state of an application or service;

10

means for reading or mirroring a value for at least one parameter for said application or service in at least one window;

means for displaying content comprised in said series of evolving window sizes

15   corresponding to said application or service, wherein said content may be changed by means as a function of said value of said at least one parameter and current instance of window size comprised in said series of displayed window sizes.

20   32.

Program system according to claim 19, comprising means located in a remote computer device or system defining said basic geometrical shape and graphical appearance of said at least one window, and means to downloaded said at least one window as needed via a network communicating with said program system.

25

33.

Program system according to claim 19, further comprising the means:

means for receiving input from an input device such as a keyboard, a mouse, a stylus or

30   artefact, a soft keyboard or similar device in communication with said computer device or system either directly connected to said computer device or system, or via a network communicating with said computer device or system running said program system;

means for transferring said input via said controlling system to a recently activated window activated by an application, user interaction or service or similar action in said computer device or system;

5   if said recently active window is not provided to receive input, said program system is setting up another new window enabling receiving such input;

means for displaying said input in said activated window or said new set up window.

10   34.

Program system according to claim 33, wherein said means receiving input in said activated window or said new set up window comprises means for activating a parsing of received text in said activated or said new set up window.

15   35.

Program system according to claim 34, wherein said means for activating said parsing is provided by dragging and dropping said window receiving said input onto another window comprising means for said parsing.

20   36.

Program system according to claim 19, wherein said means for displaying said evolving windows sizes on said display in communication with said computer device or system, comprises means of starting said displaying by sensing a touching or stroking of a surface of said display with an artefact or similar device or a finger.
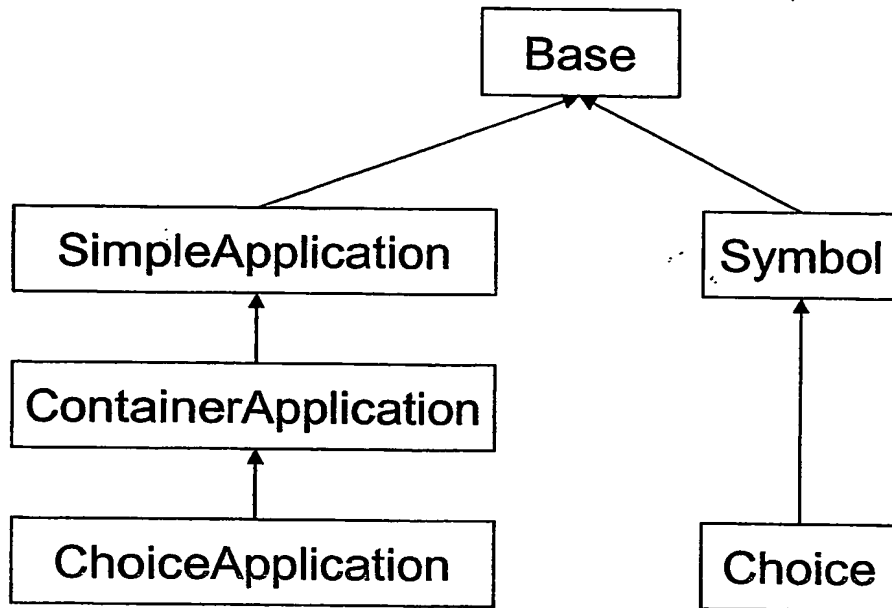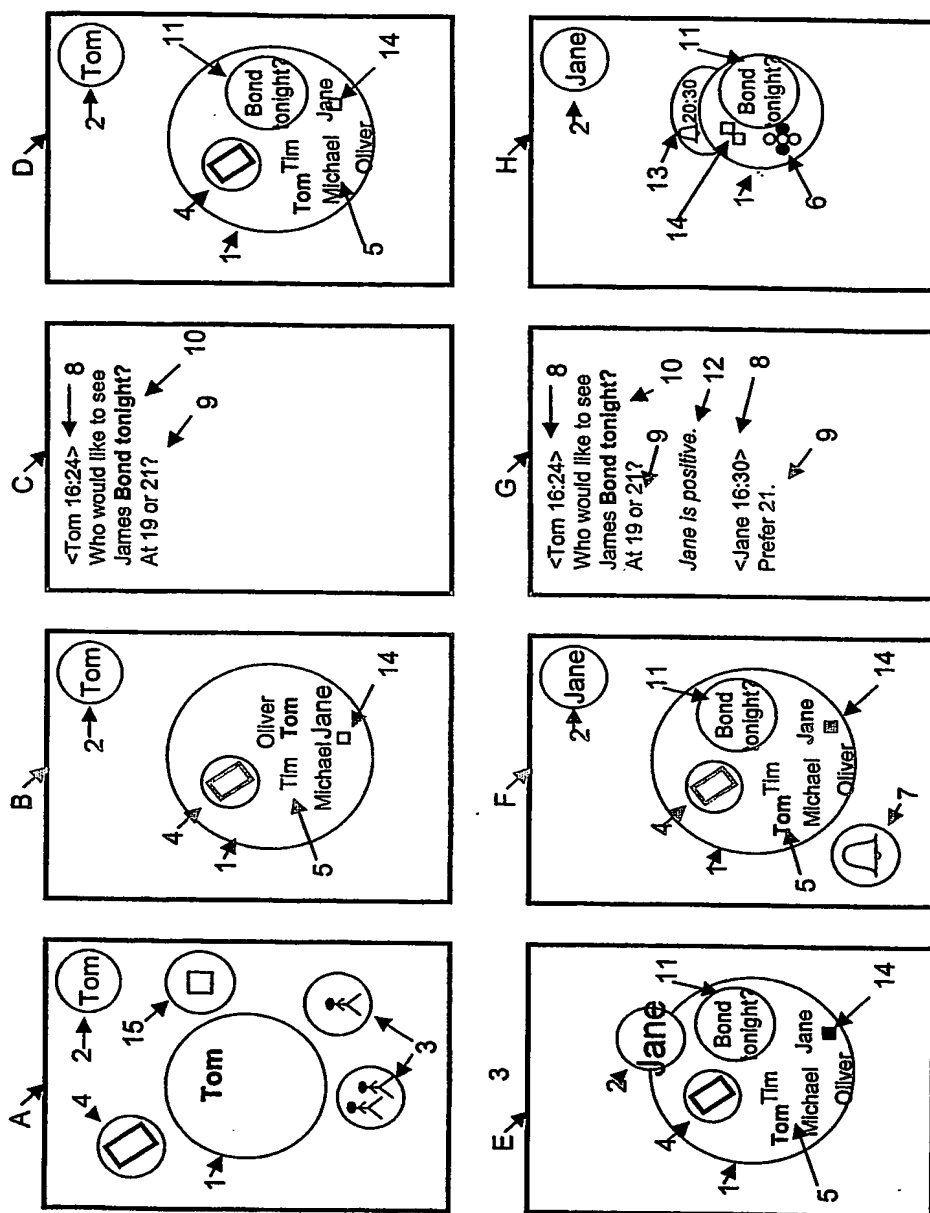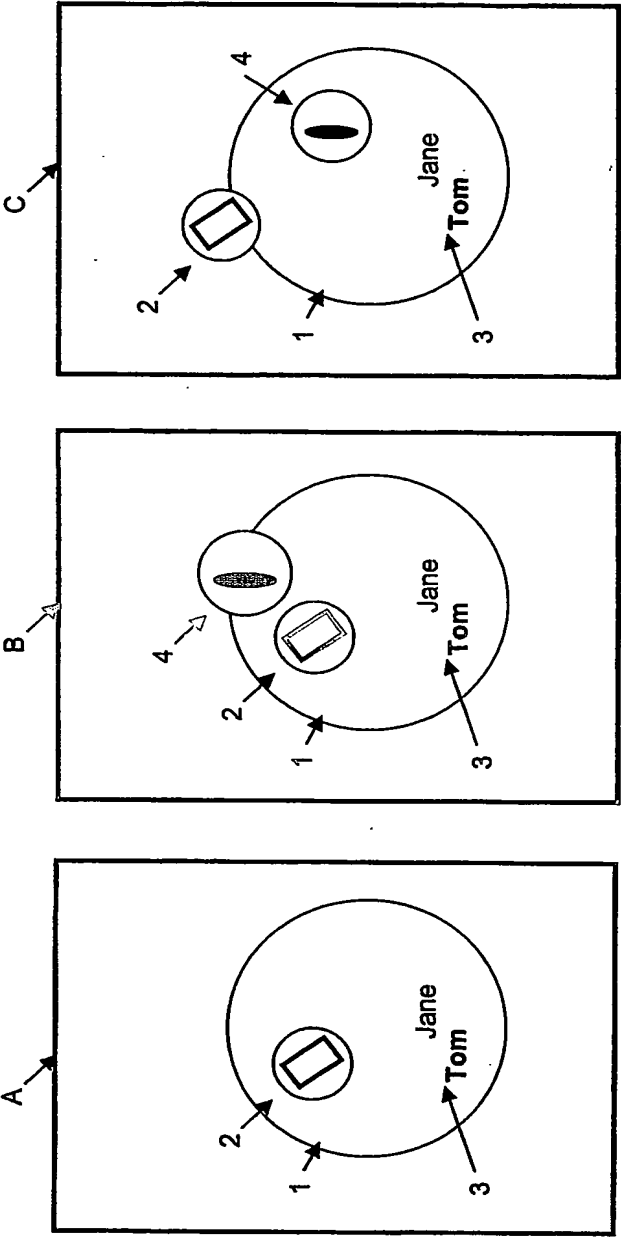
25
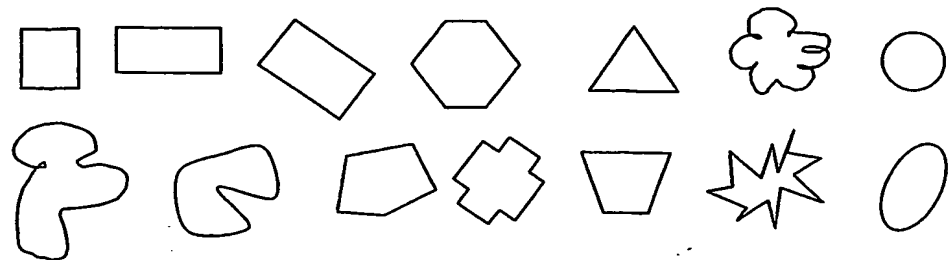
Figure 1
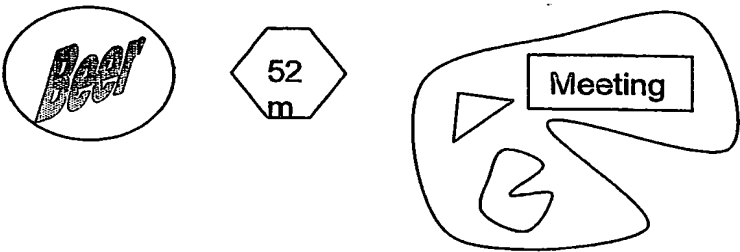
Figure 2
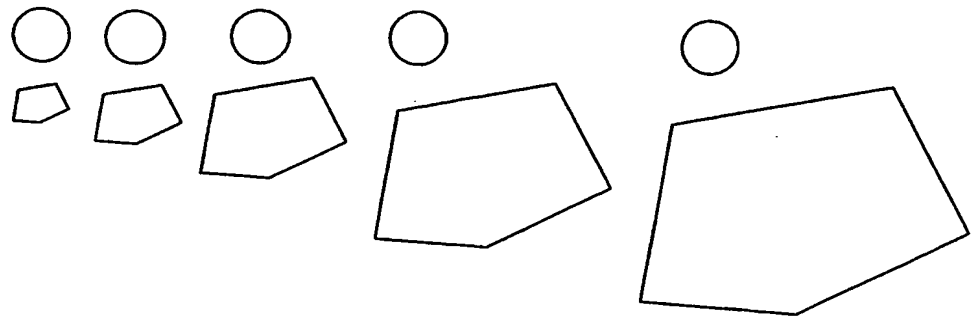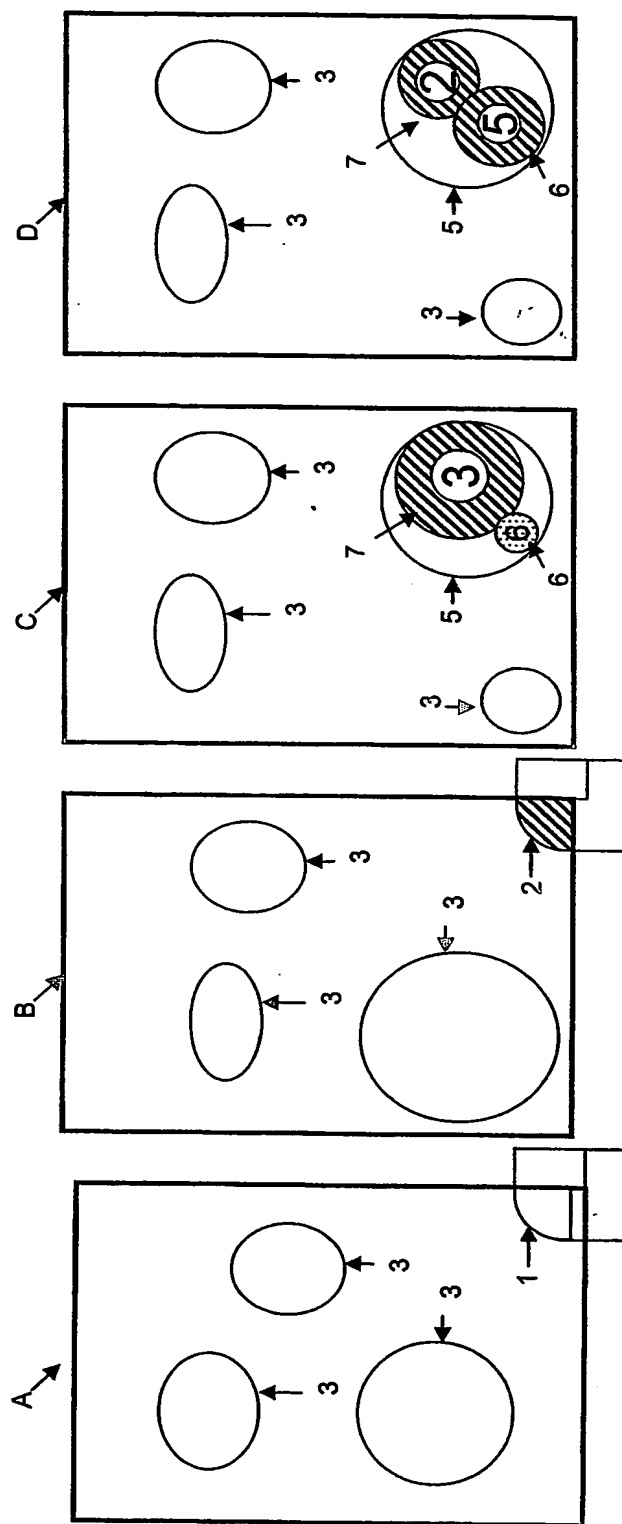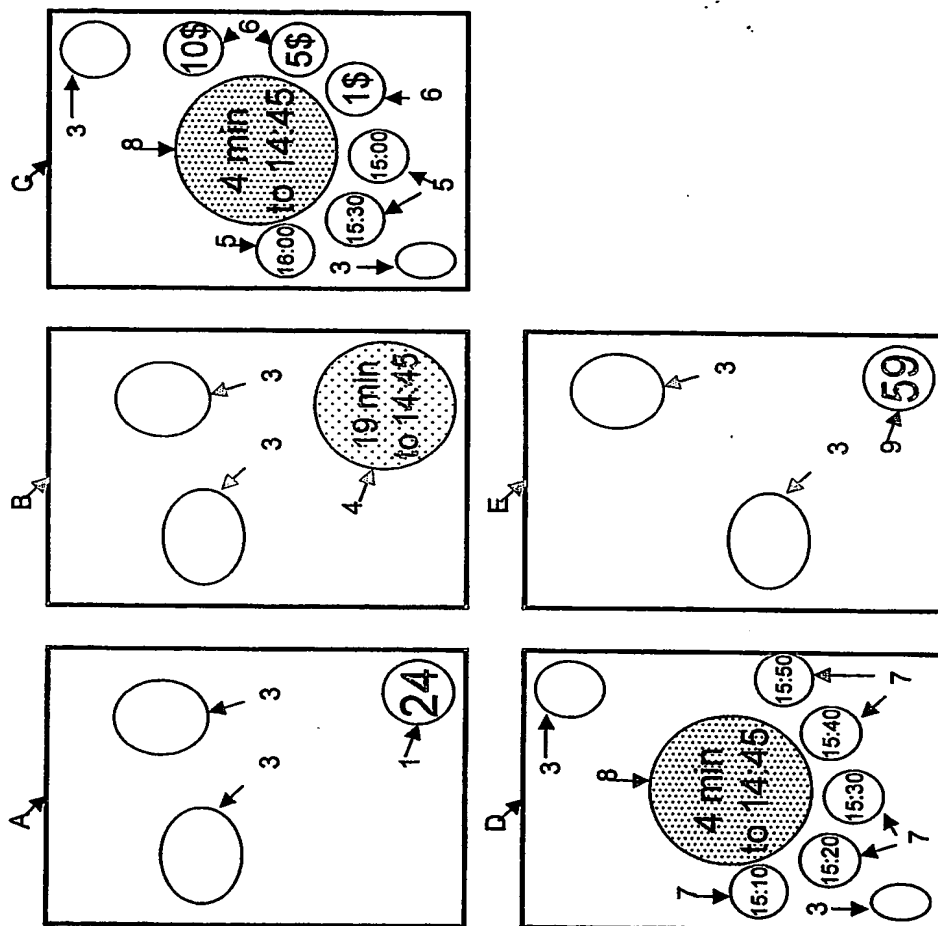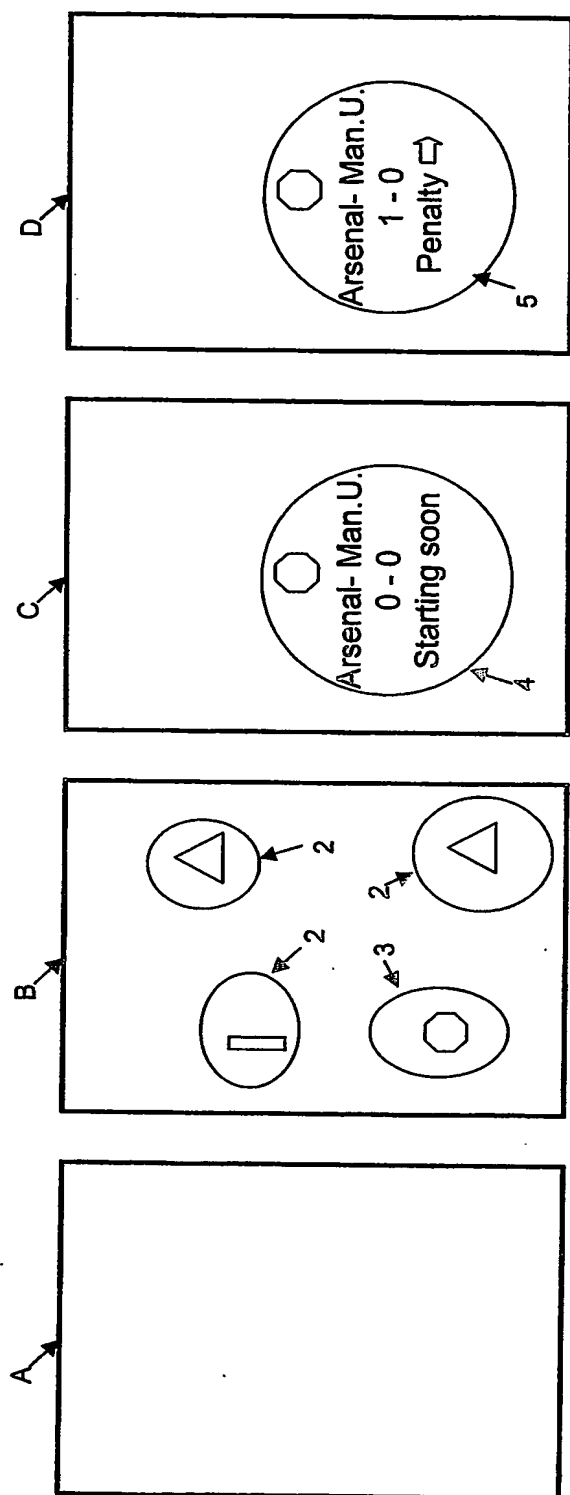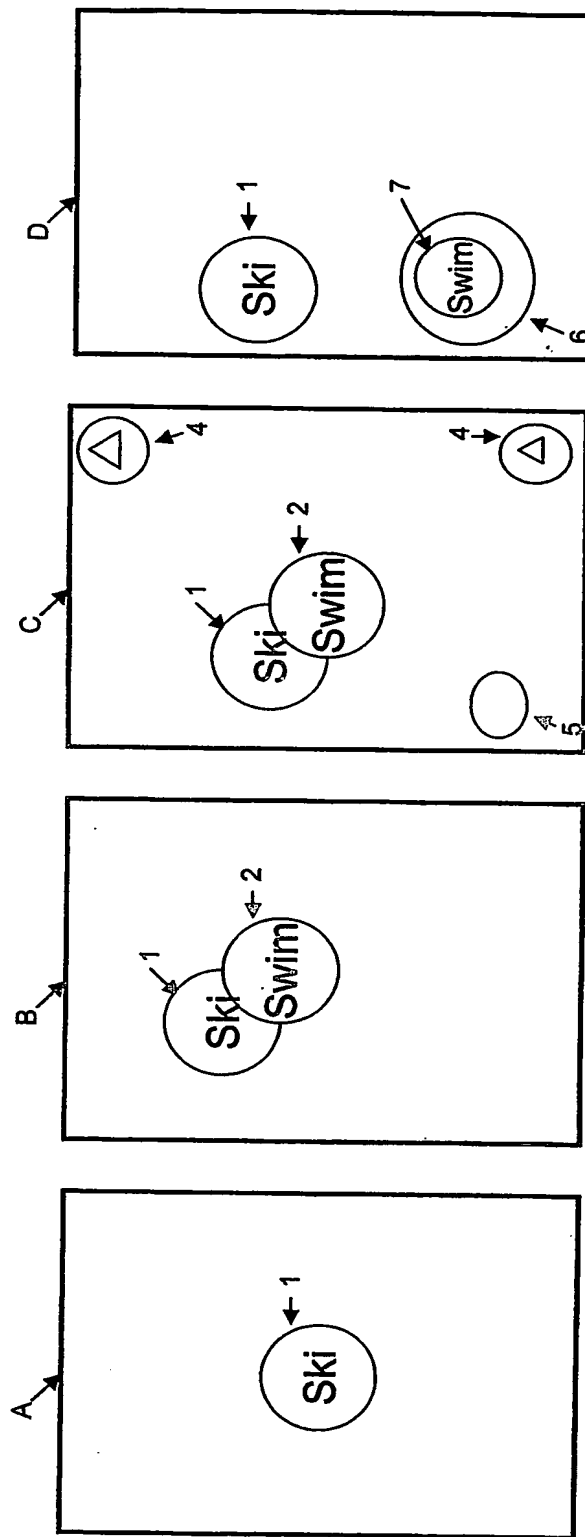

Figure 3
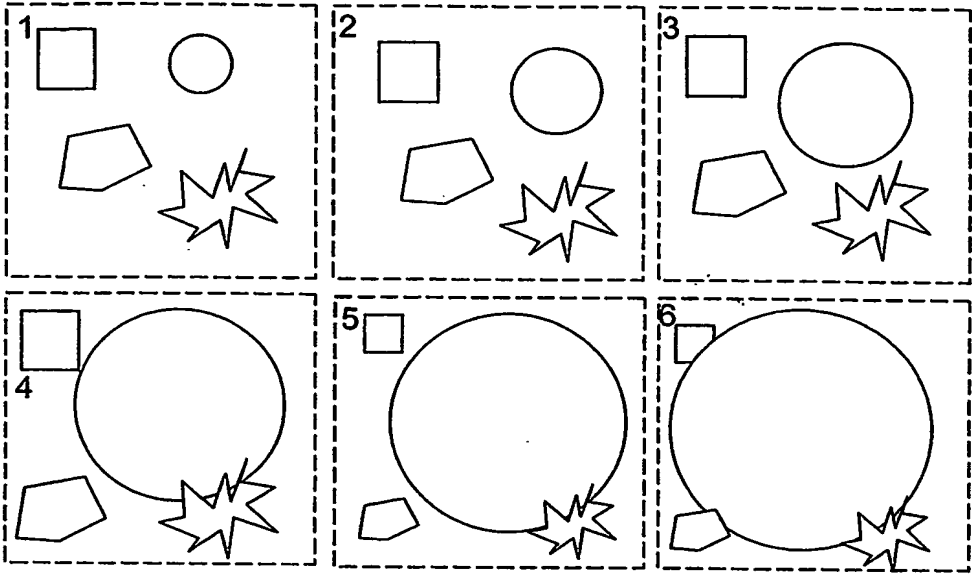
Figure 4
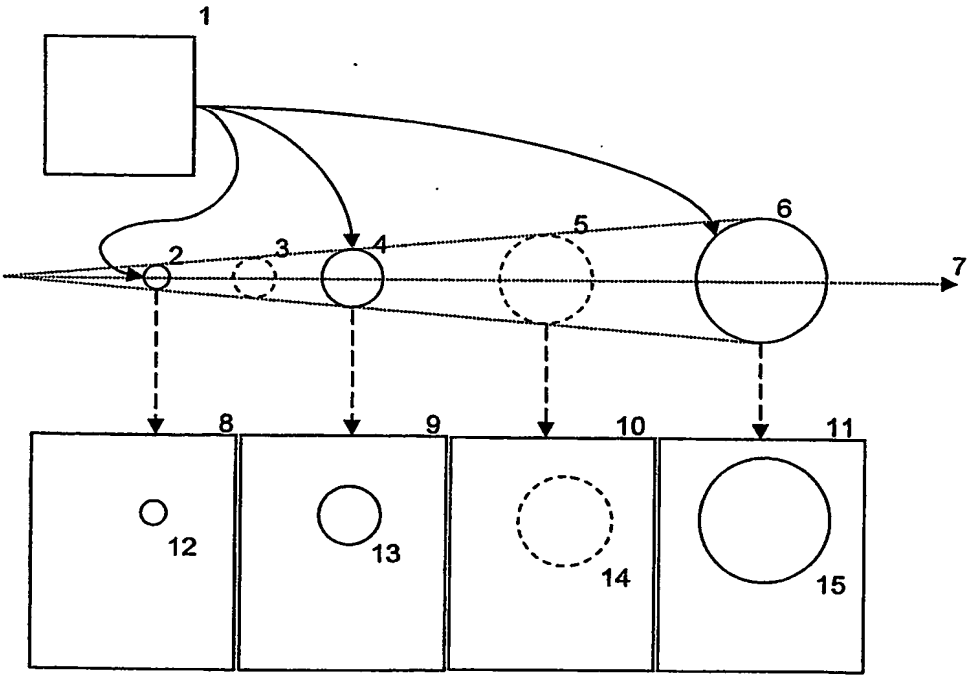
Figure 5

Figure 6

Figure 7

Control Manager ¹	List Manager ²	Resource Manager ³	Message Manager ⁴	Specific Layer
	GDI	Event	COM	Net	OS Layer
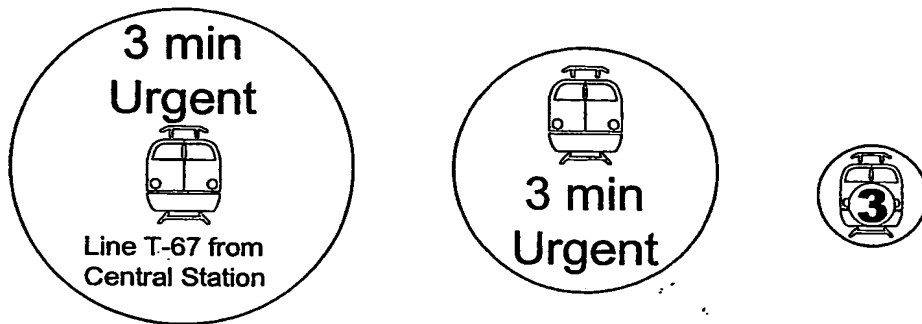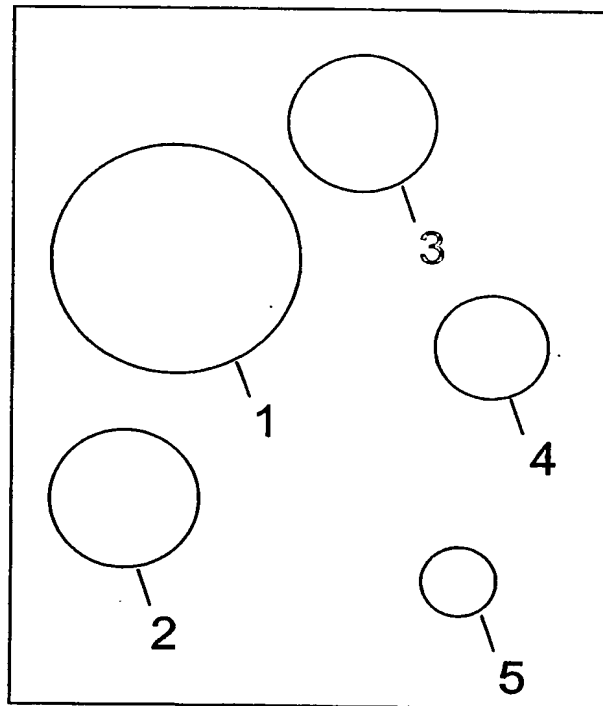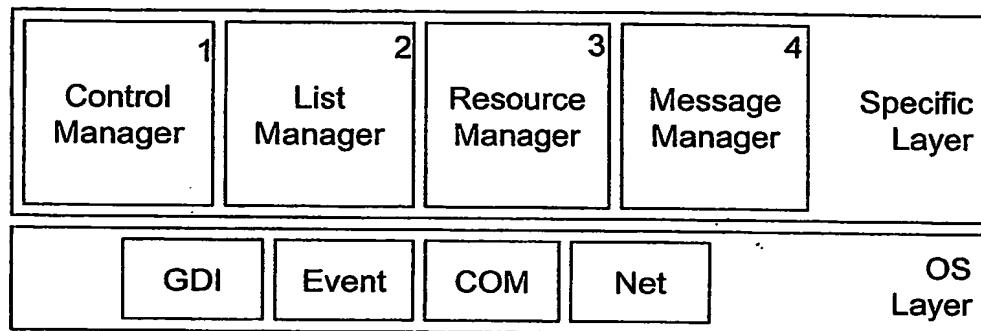
Figure 8

Window Name	Relative Importance	Resource List	External Id
A	0.1	Image 1 Audio 4	LL33
B	0.1	Image 7	PO4
C	0.6	Image 2 Image 3	
D	1	Image 1	445

Figure 9

Figure 10

Figure 11

Figure 12

Figure 13

Figure 14

D

Arsenal- Man.U.
1 - 0
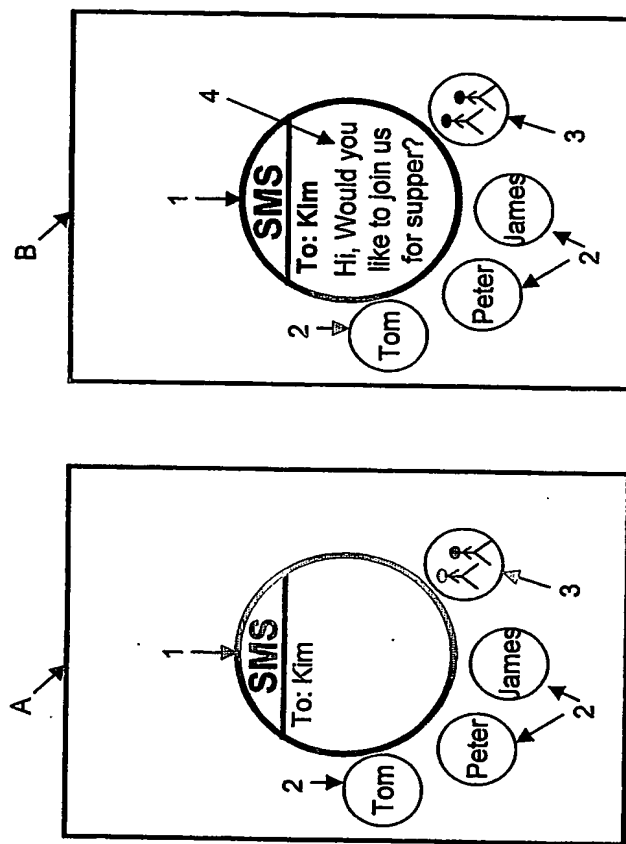Penalty ⇧

5

C

Arsenal- Man.U.
0 - 0
Starting soon

4

B

2

2

2

3

A

Figure 15

Figure 16

Figure 17

Figure 18

Figure 19